



VOLUME 55 · 1998 · CONTENTS

Animal Behaviour

EXECUTIVE EDITORS

Christopher J. Barnard
University of Nottingham
Bennett G. Galef Jr
McMaster University

EDITORS

Anders Berglund
Uppsala University
Warren Holmes
University of Michigan
Barry Keverne
University of Cambridge
John Lazarus
Newcastle University
Jeffrey R. Lucas
Purdue University
Patricia G. Parker
Ohio State University
Ronald L. Rutowski
Arizona State University
David F. Sherry
University of Western Ontario
Michael T. Siva-Jothy
University of Sheffield
Judy Stamps
University of California at Davis
Walter Wilczynski
University of Texas
Gerald S. Wilkinson
University of Maryland

MANAGING EDITORS

Kris Bruner
Indiana University
Steve Ramey
Indiana University
Angela K. Turner
University of Nottingham



ACADEMIC PRESS · LONDON

CONTENTS OF VOLUME 55



<i>Achroia grisella</i>	..	..	..	..	..	..	..	905
acoustic calls by rhesus monkeys	..	..	..	..	..	..	..	1647
adoption	..	..	..	..	..	..	..	1451
age polyethism in eusocial wasps	..	..	..	..	..	..	..	417
<i>Agelaius phoeniceus</i>	..	..	..	..	..	..	..	957, 1181
agonistic behaviour in salamanders	..	..	..	..	..	..	..	1595
and tail autotomy	..	..	..	..	..	..	..	1707
alarm calls	..	..	..	..	..	..	..	799
in barbary macaques	..	..	..	..	..	..	..	529
golden-mantled ground squirrel responses	..	..	..	..	..	..	..	705
of pipistrelle bats	..	..	..	..	..	..	..	511
red squirrels	..	..	..	..	..	..	..	451
Richardson's ground squirrels	..	..	..	..	..	..	..	529
yellow-bellied marmot responses	..	..	..	..	..	..	..	1097
allomaternal care in bottlenose dolphins	..	..	..	..	..	..	..	331
<i>Allonemobius socius</i>	..	..	..	..	..	..	..	259
alpine accentors	..	..	..	..	..	..	..	277
competition among females	..	..	..	..	..	..	..	207
male mating tactics	..	..	..	..	..	..	..	651
<i>Alytes muletensis</i>	..	..	..	..	..	..	..	1203, 1255
<i>Amblyglyphidodon leucogaster</i>	..	..	..	..	..	..	..	1165
<i>Ambystoma tigrinum</i>	..	..	..	..	..	..	..	307
American toads: female mating preferences	..	..	..	..	..	..	..	1685
Anatidae (Aves)	..	..	..	..	..	..	..	727
ancestral states of communicative display in rock iguanas	..	..	..	..	..	..	..	461
<i>Anclosimus studiosus</i>	..	..	..	..	..	..	..	171
<i>Anolis aeneus</i>	..	..	..	..	..	..	..	1471
<i>Anser anser</i>	..	..	..	..	..	..	..	1583
<i>Anthus spinoletta</i>	..	..	..	..	..	..	..	1443
ants	..	..	..	..	..	..	..	299
colony founding behaviour in	..	..	..	..	..	..	..	519
homing behaviour in	..	..	..	..	..	..	..	439
monogyny and worker mating in	..	..	..	..	..	..	..	1245
patch sampling behaviour	..	..	..	..	..	..	..	761
anurans: fertilization and parental care in	..	..	..	..	..	..	..	13
<i>Aphelocoma californica</i>	..	..	..	..	..	..	..	537
aphids: defence against predation	..	..	..	..	..	..	..	139
<i>Apis mellifera</i>	..	..	..	..	..	..	..	1141
nestmate recognition	..	..	..	..	..	..	..	519
queen competition in	..	..	..	..	..	..	..	1429
<i>Apis mellifera carnica</i>	..	..	..	..	..	..	..	1361
ARAGAKI, D.L.R., MEFFERT, L.M. A test of how well the repeatability of courtship predicts its	..	..	..	..	..	..	..	779
heritability	..	..	..	..	..	..	..	925
Argentine ants: patch sampling behaviour	..	..	..	..	..	..	..	307
ARNAL, C., CÔTE, I.M. Interactions between cleaning gobies and territorial damselfish on coral reefs	..	..	..	..	..	..	..	977
ATKINSON, D. see WEETMAN, D.	..	..	..	..	..	..	..	313
AUGUSTSSON, H. see JENSEN, P.	..	..	..	..	..	..	..	1451
Aves: Alcidae	..	..	..	..	..	..	..	1607
Aves: Anatidae	..	..	..	..	..	..	..	1659
Aves: Pipridae	..	..	..	..	..	..	..	1483
avian mobbing, roost use and diet of owls	..	..	..	..	..	..	..	939
AVITAL, E., JABLONKA, E., LACHMANN, M. Adopting adoption	..	..	..	..	..	..	..	799
BACHMAN, G.C., CHAPPELL, M.A. The energetic cost of begging behaviour in nestling house wrens	..	..	..	..	..	..	..	809
BACKWELL, P.R.Y., O'HARA, P.D., CHRISTY, J.H. Prey availability and selective foraging in shorebirds	..	..	..	..	..	..	..
bank voles: population density and food hoarding	..	..	..	..	..	..	..
BAPTISTA, L.F. see BELL, D.A.	..	..	..	..	..	..	..
Barbary macaques, shrill barks of	..	..	..	..	..	..	..
barn swallows: begging behaviour of nestlings	..	..	..	..	..	..	..

BARNARD, C.J. <i>see</i> RANTA, E.	737
BASOLO, A.L. Shift in investment between sexually selected traits: tarnishing of the silver spoon ..	665
bat defences of tympanate moths	223
bats: distress calls of	705
beavers: response to recurrent alien scents	1529
BECK, C.W. Mode of fertilization and parental care in anurans	439
beetles, parental care in	97
begging behaviour	
of barn swallows	809
in house wrens	1607
signals and biparental care	215
behavioural responses of pied flycatcher to environmental stressors	1411
BEISSINGER, S.R., TYGIELSKI, S., ELDERD, B. Social constraints on the onset of incubation in a neotropical parrot: a nestbox addition experiment	21
Belding's ground squirrels	
dispersal behaviour in	605
litter-mate preferences in	1555
BELL, D.A., TRAIL, P.W., BAPTISTA, L.F. Song learning and vocal tradition in Nuttall's white-crowned sparrows	939
BELTHOFF, J.R., DUFTY, A.M. Jr. Corticosterone, body condition and locomotor activity: a model for natal dispersal in birds	405
BEME, I. <i>see</i> VALLET, E.	291
BENHAMOU, S. <i>see</i> SEGUINOT, V.	787
<i>Betta splendens</i>	87
BEVERIDGE, M.M.C. <i>see</i> NEAT, F.C.	875
BEYNON, R.J. <i>see</i> HURST, J.L.	1289
birds	
incubation in	1043
mixed-species foraging flocks, observational learning in	1461
territory size and risk of cuckoldry	915
black grouse: mate-choice copying in	893
<i>Blattella germanica</i>	177
BLAUSTEIN, A.R. <i>see</i> MARCO, A.	1631
blue crabs: female behaviour in	589
bluebirds: paternity and paternal investment in	845
body size and fighting in cichlid fish	883
<i>Bombus humilis</i>	819
<i>Bombus pascuorum</i>	199, 819
<i>Bombus terrestris</i>	199
boobies: dominance between nestlings	1669
BOUGHMAN, J.W. <i>see</i> WILKINSON, G.S.	337
BOUGHMAN, J.W., WILKINSON, G.S. Greater spear-nosed bats discriminate group mates by vocalizations	1717
BOUTIN, S. <i>see</i> MOSES, R.A.	563
BOYD, W.S. <i>see</i> ROBERTSON, G.J.	1677
BRANT, C.L., SCHWARZ, T.M., VANDENBERGH, J.G., SCHAEFER, R.L., SOLOMON, N.G. Behavioural suppression of female pine voles after replacement of the breeding male	615
BREED, M.D., LEGER, E.A., PEARCE, A.N., WANG, Y.J. Comb wax effects on the ontogeny of honey bee nestmate recognition	13
breeding	
and food hoarding in bank voles	1483
reproductive skew	163
BREITWISCH, R. <i>see</i> LINVILLE, S.U.	119
BROCE, A. <i>see</i> REINHOLD, K.	905
brown-headed cowbirds: locating red-winged blackbird nests	1181
BUBIS, J.A., DEGREEN, H.P., UNSELL, J.L., TOMPKINS, L. Temporal manipulation of ejaculate components by newly fertilized <i>Drosophila melanogaster</i> females	1637
<i>Bucephala clangula</i>	307
<i>Bufo americanus</i>	1165
<i>Bufo boreas</i>	1631

bumblebees							
avoiding flowers visited by conspecifics	..	..	..	..	..	..	199
parasites and flower choice of	..	..	..	..	..	..	819
BURFORD, F.R.L. <i>see</i> OLIVEIRA, R.F.							1299
BURKE, T. <i>see</i> CURRIE, D.R.							689
burying beetles, parental care in	..	..	..	..	..	..	97
BUSBY, S. <i>see</i> OLVIDO, A.E.							331
bushcricket: mate choice in	..	..	..	..	..	..	1499
CAHAN, S., HELMS, K.R., RISSING, S.W. An abrupt transition in colony founding behaviour in the ant, <i>Messor pergandei</i>							1583
California sea lion: functional equivalence in	..	..	..	..	..	..	1087
CALL, J. <i>see</i> TOMASELLO, M.							1063
<i>Callinectes sapidus</i>							589
calls							
acoustic, by rhesus monkeys	..	..	..	..	..	..	1647
and dominance relationships in monkeys	..	..	..	..	..	..	51
preferences of female frogs for	..	..	..	..	..	..	1619
social, in greater spear-nosed bats	..	..	..	..	..	..	337
<i>see also</i> alarm calls; mating calls							
CANALES, C. <i>see</i> DRUMMOND, H.							1669
canary: songs and sexual display	..	..	..	..	..	..	291
<i>Canis familiaris</i>							787
cannibalism, and pathogen transmission	..	..	..	..	..	..	1255
CANT, M.A. A model for the evolution of reproductive skew without reproductive suppression	..	..	..	..	..	..	163
capuchin monkeys: spatial memory in foraging	..	..	..	..	..	..	1229
<i>Cardinalis cardinalis</i>							119
<i>Caretta caretta</i> L.							69
CARTER, C.S. <i>see</i> ROBERTS, R.L.							1131
CASEY, K. <i>see</i> MORRIS, M.R.							33
<i>Castor canadensis</i>							1529
CATTET, J. <i>see</i> SEGUINOT, V.							787
CAYFORD, J.T. <i>see</i> GOSS-CUSTARD, J.D.							745
<i>Cebus apella</i>							1229
<i>Cercopithecus atys torquatus</i>							1063
<i>Chaitophorus leucomelas</i> Koch							761
CHAPPELL, M.A. <i>see</i> BACHMAN, G.C.							1607
chiffchaff: territory size and risk of cuckoldry	..	..	..	..	..	..	915
children's physical play, relative costs of	..	..	..	..	..	..	1053
chimpanzees: following visual gaze of conspecifics	..	..	..	..	..	..	1063
chipmunks							
locomotion and vigilance	..	..	..	..	..	..	109
patch choice in	..	..	..	..	..	..	1571
CHITTKA, L. <i>see</i> MENZEL, R.							139
CHIVERS, D.P. <i>see</i> MARCO, A.							1631
CHRISTY, J.H. <i>see</i> BACKWELL, P.R.Y.							1659
CHUBB, J.C. <i>see</i> WEETMAN, D.							1361
<i>Cichlasoma nigrofasciatum</i>							1263
eichlid fish							
fighting in							
gonadal state and body size	..	..	..	..	..	..	883
injuries and energy metabolism	..	..	..	..	..	..	875
mate switching and mate quality	..	..	..	..	..	..	1263
<i>Clethrionomys glareolus</i>							1483
CLOREC, A. <i>see</i> RIVAUULT, C.							177
CLOTFELTER, E.D. What cues do brown-headed cowbirds use to locate red-winged blackbird host nests?	..	..	..	..	..	..	1181
cockroach aggregation	..	..	..	..	..	..	177
<i>Coenobita compressus</i>							485
colony founding behaviour in ants	..	..	..	..	..	..	1583
colour							
and female choice behaviour in damselfly	..	..	..	..	..	..	1517
polymorphism and mating in female damselflies	..	..	..	..	..	..	185

COLWELL, M.A. <i>see</i> DELEHANTY, D.J.	995
comfort and social stimuli in shelducks	129
communicative display of rock iguanas	1685
communicative interactions in California sea lions	1087
COOKE, F. <i>see</i> ROBERTSON, G.J.	1677
cooperative breeding	
and monogamy in prairie voles	1131
in polygynandrous alpine accentors	259
coral reefs: cleaning gobies and territorial damselfish on	1429
CORDERO, A., SANTOLAMAZZA CARBONE, S., UTZERI, C. Mating opportunities and mating costs are reduced in androchrome female damselflies, <i>Ischnura elegans</i> (Odonata)	185
CÔTE, I.M. <i>see</i> ARNAL, C.	1429
<i>Coturnix coturnix japonica</i>	545
courtship and heritability	1141
cowbirds: locating red-winged blackbird nests	1181
crabs	
avoidance of recently eaten foods	485
female behaviour in	589
crickets: embryonic diapause in	331
cuckoldry, risk of in birds	915
CUNNINGHAM, J.P., JALLOW, M.F.A., WRIGHT, D.J., ZALUCKI, M.P. Learning in host selection in <i>Helicoverpa armigera</i> (Hübner) (Lepidoptera: Noctuidae)	227
CURRIE, D.R., BURKE, T., WHITNEY, R.L., THOMPSON, D.B.A. Male and female behaviour and extra-pair paternity in the wheatear	689
CUSTODIO, M.R. <i>see</i> OLIVEIRA, R.F.	1299
<i>Cyclura</i> spp.	1685
<i>Cynomys gunnisoni</i>	351
DALL, S.R.X., WITTER, M.S. Feeding interruptions, diurnal mass changes and daily routines of behaviour in the zebra finch	715
DALLY, M.R. <i>see</i> MARKOWITZ, T.M.	573
damselfish	
and cleaning gobies on coral reefs	1429
spawning success	651
damselfly	
female choice behaviour in	1517
mating opportunities and costs	185
<i>Danaus gilippus</i>	1281
<i>Danaus plexippus</i>	1281
DAWKINS, M.S. <i>see</i> MACDOUGALL, A.	1281
DE JONG, A.D. <i>see</i> VET, L.E.M.	1277
DE VRIES, H. Finding a dominance order most consistent with a linear hierarchy: a new procedure and review	827
DEGREEN, H.P. <i>see</i> BUBIS, J.A.	1637
DELEHANTY, D.J., FLEISCHER, R.C., COLWELL, M.A., ORING, L.W. Sex-role reversal and the absence of extra-pair fertilization in Wilson's phalaropes	995
DENNIS, J.L. <i>see</i> GRIFFITHS, R.A.	207
DEVENPORT, J. <i>see</i> DEVENPORT, L.	1571
DEVENPORT, L., HUMPHRIES, T., DEVENPORT, J. Future value and patch choice in least chipmunks	1571
<i>Dinoponera quadricaps</i>	299
direction finding by sea turtles	69
dispersal behaviour in Belding's ground squirrels	605
distress calls of pipistrelle bat	705
dogs: path integration in	787
dominance	
between booby nestlings	1669
in greylag geese	171
and linear hierarchy	827
relationships among rhesus monkeys	51
structures, transitive and intransitive	1489
DOWNES, S., SHINE, R. Heat, safety or solitude? Using habitat selection experiments to identify a lizard's priorities	1387

DOWNES, S., SHINE, R. Sedentary snakes and gullible geckos: predator-prey coevolution in nocturnal rock-dwelling reptiles	1373
DRNEVICH, J.M. <i>see</i> HOWARD, R.D.	1151
<i>Drosophila melanogaster</i>	1637
DRUMMOND, H., CANALES, C. Dominance between booby nestlings involves winner and loser effects ..	1669
ducks: moult speed	1677
DUFFY, A.M. Jr <i>see</i> BELTHOFF, J.R.	405
dune-dwelling lizard: escape behaviour of	1115
DUNHAM, D.W. <i>see</i> HALPERIN, J.R.P.	87
DUNN, P.O. <i>see</i> WHITTINGHAM, L.A.	629
DÜTTMANN, H. <i>see</i> SEBBEL, P.	129
eastern bluebirds: paternity and paternal investment in	845
EGGERT, A.-K., REINKING, M., MÜLLER, J.K. Parental care improves offspring survival and growth in burying beetles	97
ejaculate components, temporal manipulation of by female pomace fly	1637
ELDERD, B. <i>see</i> BEISSINGER, S.R.	21
ELLEGREN, H. <i>see</i> LIFJELD, J.T.	319
ELLIOTT, J. <i>see</i> HALPERIN, J.R.P.	87
ELLIS, R.V. <i>see</i> JAYNE, B.C.	1115
<i>Embiriza citrinella</i>	1335
embryonic diapause in ground crickets	331
energy cost	
of begging behaviour in house wrens	1607
of sexual attractiveness in wax moths	905
energy metabolism and fighting in male cichlid fish	875
<i>Ensatina eschscholtzii</i>	1595
environmental stressors, pied flycatcher responses to	1411
escape behaviour of dune-dwelling lizards	1115
European fiddler crab: mudballing behaviour in the	1299
eusocial wasps, age polyethism in	417
extra-pair fertilization in Wilson's phalaropes	995
extra-pair mating of hooded warblers	553
extra-pair paternity in wheatear	689
<i>Falco tinnunculus</i>	1043
fecundity enhancement of stink bugs	1191
feeding	
avian mobbing and roost use of owls	313
behaviour in three-spined sticklebacks	1349
daily routines, zebra finch	715
finding and stealing in oystercatchers	745
by land hermit crabs	485
and migration in whitethroats	153
producers and scroungers	737
female behaviour	
in blue crabs	589
in the damselfly	1517
female home range dispersion in racoons	1211
female mating preferences	
and male vocal traits in American toads	1165
measuring	1029
female-male association in zebra finches	61
females and paternal investment	1507
fertilization and parental care in anurans	439
<i>Ficedula hypoleuca</i>	319, 1411
fiddler crab: mudballing behaviour in	1299
field playback experiments with rhesus monkeys	1647
fighting in male cichlid fish	
gonadal state and body size	883
injuries and energy metabolism	875
finches <i>see</i> zebra finches	
FISCHER, J. Barbary macaques categorize shrill barks into two call types	799

FLEISCHER, R.C. <i>see</i> DELEHANTY, D.J.	995
FLETCHER, D.J.C. <i>see</i> TARP, D.R.	537
flower choice of bumblebees	819
food hoarding and population density in bank voles	1483
food preferences of Norway rats, socially learned	967
foraging	
Argentine ants	519
by bumblebees	199
and feather pecking in hen chicks	861
flocks, observational learning in	1461
producers and scroungers	737
selective, in shorebirds	1659
and social calls in greater spear-nosed bats	337
and spatial memory in capuchin monkeys	1229
Formicidae, Myrmicinae	1443
<i>Forpus passerinus</i>	21
FOSTER, W.A., RHODEN, P.K. Soldiers effectively defend aphid colonies against predators in the field ..	761
FOX, C.W. <i>see</i> SAVALLI, U.M.	473
FRANCHI, E. <i>see</i> VET, L.E.M.	1277
FRANSSON, T. A feeding experiment on migratory fuelling in whitethroats, <i>Sylvia communis</i> ..	153
FRITZELL, E.K. <i>see</i> GEHRT, S.D.	1211
frogs	
preferences of female for calls	1619
túngara, female mate choice in	641
FUREY, R.E. Two cooperatively social populations of the theridiid spider <i>Anelosimus studiosus</i> in a temperate region	727
GALEF, B.G. Jr, WHITE, D.J. Mate-choice copying in Japanese quail, <i>Coturnix coturnix japonica</i> ..	545
GALEF, B.G. Jr, WHISKIN, E.E. Determinants of the longevity of socially learned food preferences of Norway rats	967
<i>Gallus gallus</i>	
foraging materials for	861
mate choice by	41
GARRETT, P.J. <i>see</i> NUNES, S.	605
<i>Gasterosteus aculeatus</i>	1349
GASTON, A.J. <i>see</i> LEFEVRE, K.	925
geckos: predator-prey coevolution in reptiles	1373
GEHRT, S.D., FRITZELL, E.K. Resource distribution, female home range dispersion and male spatial interactions: group structure in a solitary carnivore	1211
GEIGER, K. <i>see</i> MENZEL, R.	139
GEISSER, H. <i>see</i> REHSTEINER, U.	1471
Geometridae	223
German cockroach: aggregation in	177
GIBSON, R.M. <i>see</i> LANGEN, T.A.	1245
GIRI, T. <i>see</i> HALPERIN, J.R.P.	87
gobies: and territorial damselfish on coral reefs	1429
GOFF, M., SALMON, M., LOHMANN, K.J. Hatchling sea turtles use surface waves to establish a magnetic compass direction	69
golden hamsters: kin recognition	377
goldeneye: parental investment in	307
golden-mantled ground squirrel: alarm calls	529
gonadal state and fighting in cichlid fish	883
GOSS-CUSTARD, J.D., CAYFORD, J.T., LEA, S.E.G. The changing trade-off between food finding and food stealing in juvenile oystercatchers	745
GOUDIE, R.I. <i>see</i> ROBERTSON, G.J.	1677
GOULET, D. Spawning success in the damselfish <i>Amblyglyphidodon leucogaster</i> : the influence of eggs in the nest	651
GOULSON, D., HAWSON, S.A., STOUT, J.C. Foraging bumblebees avoid flowers already visited by conspecifics or by other bumblebee species	199
GOUZOULES, H., GOUZOULES, S., TOMASZYCKI, M. Agonistic screams and the classification of dominance relationships: are monkeys fuzzy logicians?	51
GOUZOULES, S. <i>see</i> GOUZOULES, H.	51
great tits: biparental care	215

greater spear-nosed bats										
foraging in	..	..	..	..	..	..	..	..	..	337
vocalizations by	..	..	..	..	..	..	..	..	..	1717
GREENE, E., MEAGHER, T.	Red squirrels, <i>Tamiasciurus hudsonicus</i> , produce predator-class specific alarm calls									511
GREENFIELD, M.D.	see REINHOLD, K.									905
green-rumped parrot	..	..	..	..	..	..	..	..	..	21
grey squirrels:	locomotion and vigilance									109
greylag geese:	social stress and dominance									171
GRIFFITHS, R.A., SCHLEY, L., SHARP, P.E., DENNIS, J.L., ROMÁN, A.	Behavioural responses of Mallorcan midwife toad tadpoles to natural and unnatural snake predators									201
GROOTHUIS, T.	see SEBBEL, P.									121
ground squirrels										
dispersal behaviour in	..	..	..	..	..	..	..	..	..	605
golden-mantled, alarm calls	..	..	..	..	..	..	..	..	..	529
Gunnison's prairie dogs:	polygyny in guppies									351
mate-choice copying in	..	..	..	..	..	..	..	..	..	893
temperature on anti-predator behaviour	..	..	..	..	..	..	..	..	..	1361
GURSKY, K.	see MARKOWITZ, T.M.									573
GUSTAFSSON, M.	see JENSEN, P.									779
HA, C.-D.T.	see NUNES, S.									605
habitat selection of lizards	..	..	..	..	..	..	..	..	..	1387
habitat-contingent reproductive behaviour in salamanders	..	..	..	..	..	..	..	..	..	1203
<i>Huematopus ostralegus</i>										745
HALE, J.	see HOWARD, R.D.									1151
HALPERIN, J.R.P., GIRI, T., ELLIOTT, J., DUNHAM, D.W.	Consequences of hyper-aggressiveness in Siamese fighting fish: cheaters seldom prospered									87
handling of lambs	..	..	..	..	..	..	..	..	..	573
HANKES, E.	see SHEN, J.X.									1443
HARE, B.	see TOMASELLO, M.									1063
HARE, J.F.	Juvenile Richardson's ground squirrels, <i>Spermophilus richardsonii</i> , discriminate among individual alarm callers									451
harlequin ducks:	moult speed									1677
HART, P.J.B.	see SALVANES, A.G.V.									1349
hatching patterns and incubation in birds	..	..	..	..	..	..	..	..	..	1043
HAUSER, M.D.	Functional referents and acoustic similarity: field playback experiments with rhesus monkeys									1647
HAWSON, S.A.	see GOULSON, D.									199
heat and habitat selection of lizards	..	..	..	..	..	..	..	..	..	1387
HEEB, P.	see KÖLLIKER, M.									215
HEGYI, Z.	see SASVARI, L.									1461
<i>Helicoverpa armigera</i>										227
HELMS, K.R.	see CAHAN, S.									1583
hen chicks:	foraging materials and feather pecking									861
HENZI, S.P., LYCETT, J.E., WEINGRILL, T.	Mate guarding and risk assessment by male mountain baboons during inter-troop encounters									1421
heritability and courtship	..	..	..	..	..	..	..	..	..	1141
HETH, G.	see TODRANK, J.									377
HINES, A.H.	see JIVOFF, P.									589
HIRSCHENHAUSER, K.	see KOTRSCHAL, K.									171
<i>Hirundo rustica</i>										809
HIRVONEN, H.	see RANTA, E.									737
<i>Histrionicus histrionicus</i>										1677
HO, S.G.	see PFENNIG, D.W.									1255
HOFFMAN, E.A.	see PFENNIG, D.W.									1255
HOLEKAMP, K.E.	see NUNES, S.									605
HOLMES, W.G., MATEO, J.M.	How mothers influence the development of litter-mate preferences in Belding's ground squirrels									1555
homing behaviour in ants	..	..	..	..	..	..	..	..	..	1443
honest begging in pigs	..	..	..	..	..	..	..	..	..	779

JOHNSEN, T.S. Behavioural correlates of testosterone and seasonal changes of steroids in red-winged blackbirds	957
JOHNSTON, R.E. <i>see</i> TODRANK, J.	377
JONES, G. <i>see</i> RUSS, J.M.	705
KAPPER, M. <i>see</i> KIME, N.M.	641
KASTAK, D. <i>see</i> SCHUSTERMAN, R.J.	1087
KEMPENAERS, B., LANCTOT, R.B., ROBERTSON, R.J. Certainty of paternity and paternal investment in eastern bluebirds and tree swallows	845
kestrels: incubation in	1043
KIESECKER, J.M. <i>see</i> MARCO, A.	1631
KIMBALL, R. <i>see</i> LIGON, J.D.	41
KIME, N.M., RAND, A.S., KAPPER, M., RYAN, M.J. Consistency of female choice in the tungara frog: a permissive preference for complex characters	641
kin recognition in golden hamsters	377
KOLLIKER, M., RICHNER, H., WERNER, I., HEEB, P. Begging signals and biparental care: nestling choice between parental feeding locations	215
KORPIMÄKI, E. <i>see</i> WIEBE, K.L.	1043
KOTRSCHAL, K., HIRSCHENHAUSER, K., MÖSTL, E. The relationship between social stress and dominance is seasonal in greylag geese	171
KRAMER, D.L. <i>see</i> McADAM, A.G.	109
KREUTZER, M. <i>see</i> VALLET, E.	291
KRISHNAN, V.V. <i>see</i> STAMPS, J.A.	461
KVARNEMO, C., SIMMONS, L.W. Male potential reproductive rate influences mate choice in a bushcricket	1499
LACHMANN, M. <i>see</i> AVITAL, E.	1451
lambs, affinity for humans	573
LAMONT, J. <i>see</i> MARTINS, E.P.	1685
LANCTOT, R.B. <i>see</i> KEMPENAERS, B.	845
land hermit crabs: avoidance of recently eaten foods	485
LANGEN, T.A., GIBSON, R.M. Sampling and information acquisition by western scrub-jays, <i>Aphelocoma californica</i>	1245
LATRUFFE, C. <i>see</i> OLIVEIRA, R.F.	1299
LEA, S.E.G. <i>see</i> GOSS-CUSTARD, J.D.	745
least chipmunks: patch choice in	1571
LEFEVRE, K., MONTGOMERIE, R., GASTON, A.J. Parent-offspring recognition in thick-billed murres (Aves: Alcidae)	925
leg band symmetry in zebra finches	61
LEGER, E.A. <i>see</i> BREED, M.D.	13
Lepidoptera: Noctuidae	227
Lepidoptera: Pyralidae	905
<i>Leptopilina heterotoma</i>	1277
LIFIELD, J.T., SLAGSVOLD, T., ELLEGREN, H. Experimentally reduced paternity affects paternal effort and reproductive success in pied flycatchers	319
LIGON, J.D., KIMBALL, R., MEROLA-ZWARTJES, M. Mate choice by female red junglefowl: the issues of multiple ornaments and fluctuating symmetry	41
LILLIENDAHL, K. Yellowhammers get fatter in the presence of a predator	1335
linear hierarchy, dominance order and	827
<i>Linepithema humile</i>	519
LINVILLE, S.U., BREITWISCH, R., SCHILLING, A.J. Plumage brightness as an indicator of parental care in northern cardinals	119
Linyphiidae	387
litter-mate preferences in Belding's ground squirrels	1555
lizards	
dune-dwelling, escape behaviour of	1115
habitat selection in	1387
territory acquisition in	461
locomotion and vigilance in small mammals	109
LOHMANN, K.J. <i>see</i> GOFF, M.	69
LOTEN, A. Differences in begging behaviour between barn swallow, <i>Hirundo rustica</i> , nestlings	809
LYCETT, J.E. <i>see</i> HENZI, S.P.	1421
<i>Macaca arctoides</i>	1063
<i>Macaca fuscata</i>	673

<i>Macaca mulatta</i>								1647
dominance relationships among	..	..	..	..	..	..	..	51
following visual gaze of conspecifics	..	..	..	..	..	..	..	1063
parental abuse	..	..	..	..	..	..	..	1
<i>Macaca nemestrina</i>								1063
<i>Macaca sylvanus</i>								799
macaques, Japanese	..	..	..	..	..	..	..	673
MACDOUGALL, A., DAWKINS, M.S. Predator discrimination error and the benefits of Müllerian mimicry								1281
MADISON, D.M. Habitat-contingent reproductive behaviour in radio-implanted salamanders: a model and test	..	..	..	..	..	..	..	1203
MAESTRIPIERI, D. Parenting styles of abusive mothers in group-living rhesus macaques	..	..	..	..	..	..	..	1
male body size								1151
in Japanese medaka	..	..	..	..	..	..	..	473
in seed beetles	..	..	..	..	..	..	..
male paternal care								1507
and sexual selection	..	..	..	..	..	..	..	629
in a variable mating system	..	..	..	..	..	..	..	1499
male reproductive rate and mate choice in bushcrickets	..	..	..	..	..	..	..	1211
male spatial interactions in raccoons	..	..	..	..	..	..	..	1165
male vocal traits and female mating preferences in American toads	..	..	..	..	..	..	..	207
Malloccan midwife toad: predators of	..	..	..	..	..	..	..	977
manakins: sexual selection in	..	..	..	..	..	..	..
MANN, J., SMUTS, B.B. Natal attraction: allomaternal care and mother-infant separations in wild bottlenose dolphins	..	..	..	..	..	..	..	1097
MAPPE, T. High population density in bank voles stimulates food hoarding after breeding	..	..	..	..	..	..	..	1483
MARCHETTI, K. The evolution of multiple male traits in the yellow-browed leaf warbler	..	..	..	..	..	..	..	361
MARCO, A., KIESECKER, J.M., CHIVERS, D.P., BLAUSTEIN, A.R. Sex recognition and mate choice by male western toads, <i>Bufo boreas</i>	..	..	..	..	..	..	..	1631
MARGULIS, S.W. Relationships among parental inbreeding, parental behaviour and offspring viability in oldfield mice	..	..	..	..	..	..	..	427
MARKOWITZ, T.M., DALLY, M.R., GURSKY, K., PRICE, E.O. Early handling increases lamb affinity for humans	..	..	..	..	..	..	..	573
<i>Marmota flaviventris</i>								529
MARTENS, R.S. see HOWARD, R.D.								1151
MARTINS, E.P., LAMONT, J. Estimating ancestral states of communicative display: a comparative study of <i>Cyclura</i> rock iguanas	..	..	..	..	..	..	..	1685
mate choice								1499
in bushcricket	..	..	..	..	..	..	..	893
copying in guppies	..	..	..	..	..	..	..	1517
in the damselfly	..	..	..	..	..	..	..	641
female, in túngara frog	..	..	..	..	..	..	..	41
by female red junglefowl	..	..	..	..	..	..	..	545
in Japanese quail	..	..	..	..	..	..	..	1631
by male western toads	..	..	..	..	..	..	..	1151
and mate competition in Japanese medaka	..	..	..	..	..	..	..	1191
non-genetic benefits of	..	..	..	..	..	..	..	387
in sierra dome spiders	..	..	..	..	..	..	..	1151
mate competition in Japanese medaka	..	..	..	..	..	..	..
mate guarding								589
in blue crabs	..	..	..	..	..	..	..	1421
by male mountain baboons	..	..	..	..	..	..	..	1263
mate quality in convict cichlids	..	..	..	..	..	..	..	1263
mate switching in convict cichlids	..	..	..	..	..	..	..	1555
MATEO, J.M. see HOLMES, W.G.								1
maternal abuse in rhesus monkeys	..	..	..	..	..	..	..
mating								553
extra-pair, of hooded warblers	..	..	..	..	..	..	..	299
of workers in queenless ants	..	..	..	..	..	..	..	1011
mating behaviour in praying mantids	..	..	..	..	..	..	..
mating calls								673
Japanese macaques	..	..	..	..	..	..	..	641
túngara frog	..	..	..	..	..	..	..	185
mating costs in androchrome female damselflies	..	..	..	..	..	..	..

[illegible]

natal attraction in bottlenose dolphins	..	..	..	..	..	..	1097
natal dispersal in screech owls	..	..	..	..	..	..	405
NEAT, F.C., HUNTINGFORD, F.A., BEVERIDGE, M.M.C. Fighting and assessment in male cichlid fish: the effects of asymmetries in gonadal state and body size	..	..	..	..	..	..	883
NEAT, F.C., TAYLOR, A.C., HUNTINGFORD, F.A. Proximate costs of fighting in male cichlid fish: the role of injuries and energy metabolism	..	..	..	..	..	..	875
<i>Neotoma cinerea</i>							563
<i>Nerene litigiosa</i>							387
nestmate recognition in honey bees	..	..	..	..	..	..	13
<i>Nezara viridula</i> L.							1191
NICOL, C.J. see WARBURTON, H.J.							1325
<i>Nicrophorus vespilloides</i>							97
<i>Ninox strenua</i>							313
NISHIKAWA, K.C. see WILTENMUTH, E.B.							1595
Noctuidae (Lepidoptera)	..	..	..	..	..	..	227
NONACS, P., SORIANO, J.L. Patch sampling behaviour and future expectations in Argentine ants, <i>Linepithema humile</i>	..	..	..	..	..	..	519
northern cardinals: parental care in	..	..	..	..	..	..	119
Norway rats: socially learned food preferences	..	..	..	..	..	..	967
NOTTEBOHM, F. see TCHERNICHOVSKI, O.							1003
NUNES, S., HA, C.-D.T., GARRETT, P.J., MUEKE, E.-M., SMALE, L., HOLEKAMP, K.E. Body fat and time of year interact to mediate dispersal behaviour in ground squirrels	..	..	..	..	..	..	605
Nuttall's white-crowned sparrows: song learning and vocal tradition in	..	..	..	..	..	..	939
observational learning, in mixed-species foraging flocks	..	..	..	..	..	..	1461
O'DONNELL, S. Genetic effects on task performance, but not on age polyethism, in a swarm-founding eusocial wasp	..	..	..	..	..	..	417
odours							
beaver response to	..	..	..	..	..	..	1529
and cockroach aggregation	..	..	..	..	..	..	177
discrimination in parasitic wasps	..	..	..	..	..	..	1271
kin recognition in golden hamsters	..	..	..	..	..	..	377
urine scent marks of male house mice	..	..	..	..	..	..	1289
<i>Oedura lesueurii</i>							1371, 1387
<i>Oenanthe oenanthe</i>							689
offspring survival in burying beetles	..	..	..	..	..	..	97
O'HARA, P.D. see BACKWELL, P.R.Y.							1659
oldfield mice: parental inbreeding in	..	..	..	..	..	..	427
olfactory signals, in urine scent marks of male house mice	..	..	..	..	..	..	1289
OLIVEIRA, R.F., MCGREGOR, P.K., BURFORD, F.R.L., CUSTÓDIO, M.R., LATRUFFE, C. Functions of mudballing behaviour in the European fiddler crab, <i>Uca tangeri</i>	..	..	..	..	..	..	1299
OLVIDO, A.E., BUSBY, S., MOUSSEAU, T.A. Oviposition and incubation environmental effects on embryonic diapause in a ground cricket	..	..	..	..	..	..	331
operant costs affects visits to resources in mice	..	..	..	..	..	..	1325
<i>Operopthera</i> spp.							223
ORING, L.W. see DELEHANTY, D.J.							995
<i>Oryzias latipes</i>							1151
<i>Otus asio</i>							405
<i>Otus kennicottii</i>							405
oviposition and incubation and embryonic diapause in ground crickets	..	..	..	..	..	..	331
<i>Ovis aries</i>							573
owls: roost use and diet	..	..	..	..	..	..	313
oystercatchers							
food finding and food stealing	..	..	..	..	..	..	745
<i>Pan troglodytes</i>							1063
PAPAJ, D.R. see VET, L.E.M.							1277
<i>Papio cynocephalus</i>							1421
<i>Pararge aegeria</i>							1341
parasites and flower choice of bumblebees	..	..	..	..	..	..	819
parasitic wasps: information on odour discrimination in	..	..	..	..	..	..	1271
parasitism, brown-headed cowbirds locating red-winged blackbird nests	..	..	..	..	..	..	1181

- parental care
 in anurans 439
 begging signals and 215
 in burying beetles 97
 in northern cardinals 119
 parental inbreeding in oldfield mice 427
 parental intervention in woodrats 563
 parental investment in goldeneye 307
 parent-offspring recognition in thick-billed murres 925
Parus major 215, 1461
Parus palustris 1461
 patch choice in least chipmunks 1571
 patch sampling behaviour in Argentine ants 519
 paternal care/effort
 in eastern bluebirds and tree swallows 845
 in pied flycatchers 319
 and sexual selection 1507
 paternity
 in eastern bluebirds and tree swallows 845
 in a variable mating system 629
 path integration in dogs 787
 pathogen transmission and cannibalism 1255
 PAVEY, C.R., SMYTH, A.K. Effects of avian mobbing on roost use and diet of powerful owls, *Ninox strenua* 313
 PAYNE, L.L. see PAYNE, R.B.
 PAYNE, R.B., PAYNE, L.L., WOODS, J.L. Song learning in brood parasitic indigobirds, *Vidua chalybeata*: song mimicry of the host species 1537
 PEARCE, A.N. see BREED, M.D. 13
 PEETERS, C. see MONNIN, T. 299
 PELLEGRINI, A.D., HORVAT, M., HUBERTY, P. The relative cost of children's physical play 1053
Pemphigus spyrothecae Pass. 761
Peromyscus polionotus 427
 PEUHKURI, N. see RANTA, E. 737
 PFENNIG, D.W., HO, S.G., HOFFMAN, E.A. Pathogen transmission as a selective force against cannibalism 1255
Phalaropus tricolor 995
Phoenicurus phoenicurus 1311
Phylloscopus collybita 915
Phylloscopus inornatus 361
Phyllostomus hastatus 337, 1717
Physalaemus pustulosus 641
 pied flycatchers
 paternal effort and reproductive success 319
 responses to environmental stressors 1411
 pigs: honest begging in 779
 pigtail macaques: following visual gaze of conspecifics 1063
 pine voles: behavioural suppression of 615
 pipistrelle bats: distress calls of 705
Pipistrellus pipistrellus 705
Platytypha caligata 1517
 play, relative costs of 1053
Plethodon cinereus 1707
 plumage brightness and parental care in northern cardinals 119
Pocilia reticulata 893, 1361
Polybia aequatorialis 417
 polygynandrous alpine accentors: female competition 259, 277
 polygyny of Gunnison's prairie dogs 351
 pomace fly: manipulation of ejaculate components by 1637
 population density in bank voles 1483
 POYSA, H. see RUUSILA, V. 307
 prairie voles: cooperative breeding and monogamy 1131
 praying mantids: mating opportunities and behaviour in 1011
 predator-prey coevolution in reptiles 1373

predators/predation									
and alarm calls by red squirrels	..	..	..	..	..	..	..	..	511
on aphid colonies	..	..	..	..	..	..	..	..	761
discrimination error in Müllerian mimicry	..	..	..	..	..	..	..	..	1281
golden-mantled ground squirrel	..	..	..	..	..	..	..	..	529
on Mallorean midwife toad tadpoles	..	..	..	..	..	..	..	..	207
temperature on behaviour in guppies	..	..	..	..	..	..	..	..	1361
yellow-bellied marmot	..	..	..	..	..	..	..	..	529
and yellowhammers	..	..	..	..	..	..	..	..	1335
prey availability in shorebirds	..	..	..	..	..	..	..	..	1659
PRICE, E.O. see MARKOWITZ, T.M.									57
primates: following visual gaze of conspecifics	..	..	..	..	..	..	..	..	1063
<i>Procyon lotor</i>									1211
proteins in urine scent marks of male house mice	..	..	..	..	..	..	..	..	1289
PRUM, R.O. Sexual selection and the evolution of mechanical sound production in manakins (Aves: Pipridae)	..	..	..	..	..	..	..	..	977
<i>Prunella collaris</i>									259, 277
quail, Japanese: mate choice in	..	..	..	..	..	..	..	..	545
queen competition within honey bee colonies	..	..	..	..	..	..	..	..	537
RACEY, P.A. see RUSS, J.M.									705
radio-collared raccoons: group structure in	..	..	..	..	..	..	..	..	1211
radio-implantation: salamanders, habitat-contingent reproductive behaviour	..	..	..	..	..	..	..	..	1203
RAND, A.S. see KIME, N.M.									641
RANTA, E., PEUHKURI, N., HIRVONEN, H., BARNARD, C.J. Producers, scroungers and the price of a free meal	..	..	..	..	..	..	..	..	737
rats: socially learned food preferences	..	..	..	..	..	..	..	..	967
red junglefowl: mate choice by	..	..	..	..	..	..	..	..	41
red squirrels: alarm calls	..	..	..	..	..	..	..	..	511
redstarts in true-zero magnetic fields	..	..	..	..	..	..	..	..	1311
red-winged blackbirds									
brown-headed cowbirds locating host nests	..	..	..	..	..	..	..	..	1181
testosterone and seasonal changes of steroids in	..	..	..	..	..	..	..	..	957
REHSTEINER, U., GEISSER, H., REYER, H.-U. Singing and mating success in water pipits: one specific song element makes all the difference	..	..	..	..	..	..	..	..	1471
REINHOLD, K., GREENFIELD, M.D., JANG, Y., BROCE, A. Energetic cost of sexual attractiveness: ultrasonic advertisement in wax moths	..	..	..	..	..	..	..	..	905
REINKING, M. see EGGERT, A.-K.									97
repeatability of courtship and heritability	..	..	..	..	..	..	..	..	1141
reproductive behaviour, in salamanders	..	..	..	..	..	..	..	..	1203
reproductive skew without suppression	..	..	..	..	..	..	..	..	163
reproductive success in pied flycatchers	..	..	..	..	..	..	..	..	319
reproductive suppression of female pine voles	..	..	..	..	..	..	..	..	615
reptiles: predator-prey coevolution in	..	..	..	..	..	..	..	..	1373
<i>Requena verticalis</i>									1499
resource distribution in raccoons	..	..	..	..	..	..	..	..	1211
REYER, H.-U. see REHSTEINER, U.									1471
rhesus monkeys									
acoustic calls by	..	..	..	..	..	..	..	..	1647
dominance relationships among	..	..	..	..	..	..	..	..	51
following visual gaze of conspecifics	..	..	..	..	..	..	..	..	1063
parental abuse in	..	..	..	..	..	..	..	..	1
RHODEN, P.K. see FOSTER, W.A.									761
Richardson's ground squirrels: alarm calls	..	..	..	..	..	..	..	..	451
RICHNER, H. see KÖLLIKER, M.									215
RINGSBY, T.-H. see TUFTO, J.									1489
risk assessment by male mountain baboons	..	..	..	..	..	..	..	..	1421
RISSING, S.W. see CAHAN, S.									1583
RIVAUULT, C., CLOAREC, A. Cockroach aggregation: discrimination between strain odours in <i>Blattella germanica</i>	..	..	..	..	..	..	..	..	177
ROBERTS, R.L., WILLIAMS, J.R., WANG, A.K., CARTER, C.S. Cooperative breeding and monogamy in prairie voles: influence of the sire and geographical variation	..	..	..	..	..	..	..	..	1133

ROBERTSON, D.H.L. <i>see</i> HURST, J.L.	1289
ROBERTSON, G.J., COOKE, F., GOUDIE, R.I., BOYD, W.S. Moults speed predicts pairing success in male harlequin ducks	1677
ROBERTSON, R.J. <i>see</i> KEMPENAEERS, B.	845
rock iguanas: communicative display	1685
RODRIGUES, M. No relationship between territory size and the risk of cuckoldry in birds ..	915
ROMAN, A. <i>see</i> GRIFFITHS, R.A.	207
roost use and diet of owls	313
RUSS, J.M., RACEY, P.A., JONES, G. Intraspecific responses to distress calls of the pipistrelle bat, <i>Pipistrellus pipistrellus</i>	705
RUUSILA, V., PÖYSÄ, H. Shared and unshared parental investment in the precocial goldeneye (Aves: Anatidae)	307
RYAN, M.J. <i>see</i> KIME, N.M.	641
RYDELL, J. <i>see</i> SVENSSON, A.M.	223
safety and habitat selection in lizards	1387
salamanders	
agonistic behaviour in	1595
habitat-contingent reproductive behaviour	1203
tail autotomy in	1707
SALMON, M. <i>see</i> GOFF, M.	69
SALVANES, A.G.V., HART, P.J.B. Individual variability in state-dependent feeding behaviour in three-spined sticklebacks	1349
SANTOLAMAZZA CARBONE, S. <i>see</i> CORDERO, A.	185
SASVARI, L., HEGYI, Z. How mixed-species foraging flocks develop in response to benefits from observational learning	1461
SAVALLI, U.M., FOX, C.W. Sexual selection and the fitness consequences of male body size in the seed beetle <i>Stator limbatus</i>	473
scents, beaver response to	1529
SCHAEFER, R.L. <i>see</i> BRANT, C.L.	615
SCHILLING, A.J. <i>see</i> LINVILLE, S.U.	119
SCHLEY, L. <i>see</i> GRIFFITHS, R.A.	207
SCHMID-HEMPEL, P., STAUFFER, H.-P. Parasites and flower choice of bumblebees	819
SCHUSTERMAN, R.J., KASTAK, D. Functional equivalence in a California sea lion: relevance to animal social and communicative interactions	1087
SCHWAB, T.M. <i>see</i> BRANT, C.L.	615
SCHWAB, H. <i>see</i> TCHERNICHOVSKI, O.	1003
<i>Sciurus carolinensis</i>	109
screech owls: natal dispersal in	405
scrubwrens	629
sea lions: functional equivalence in	1087
sea turtles: establishing direction	69
SEBBEL, P., DÜTTMANN, H., GROOTHUIS, T. Influence of comfort and social stimuli on a comfort movement and a display derived from it	129
seed beetles: sexual selection in	473
SEGUINOT, V., CATTET, J., BENHAMOU, S. Path integration in dogs	787
<i>Sericornis frontalis</i>	629
<i>Serinus canaria</i>	291
sex recognition by male western toads	1631
sex-biased mortality in woodrats	563
sex-role reversal in Wilson's phalaropes	995
sexual attractiveness	
energy cost of in wax moths	905
of male zebra finch song	1003
sexual competition in blue crabs	589
sexual display and canary songs	291
sexual selection	
in manakins	977
and paternal investment	1507
in seed beetles	473
shift in investment	665
sexual signals in female swordtail fish	33

sexually cannibalistic praying mantids: mating behaviour in	..	..	..	..	1011
SHARP, P.E. <i>see</i> GRIFFITHS, R.A.					207
shelducks: social stimuli and comfort in	..	..	..	..	129
SHEN, J.X., XU, Z.M., HANKES, E. Direct homing behaviour in the ant, <i>Tetramorium caespitum</i> (Formicidae, Myrmicinae)	..	..	..	..	1443
SHINE, R. <i>see</i> DOWNES, S.					1371, 1387
shorebirds: prey availability and selective foraging in	..	..	..	..	1659
shrill barks of Barbary macaques	..	..	..	..	799
SHRINER, W.M. Yellow-bellied marmot and golden-mantled ground squirrel responses to hetero-specific alarm calls	..	..	..	..	529
<i>Sialia sialis</i>					845
Siamese fighting fish: hyper-aggressiveness	..	..	..	..	87
sierra dome spiders: multi-male mating and female choice	..	..	..	..	387
SILVERIN, B. Behavioural and hormonal responses of the pied flycatcher to environmental stressors	..	..	..	..	1411
SIMMONS, L.W. <i>see</i> KVARNEMO, C.					1499
singing and mating success in water pipits	..	..	..	..	1471
SLAGSVOLD, T. <i>see</i> LIFJELD, J.T.					319
SMALE, L. <i>see</i> NUNES, S.					605
SMUTS, B.B. <i>see</i> MANN, J.					1097
SMYTH, A.K. <i>see</i> PAVEY, C.R.					313
snakes					
and behaviour of Mallorcan midwife toad tadpoles	..	..	..	..	207
predator-prey coevolution in reptiles	..	..	..	..	1373
social calls coordinate foraging in greater spear-nosed bats	..	..	..	..	337
social interactions in California sea lions	..	..	..	..	1087
social learning in starlings	..	..	..	..	79
social populations of theridiid spider	..	..	..	..	727
social stimuli and comfort in shelducks	..	..	..	..	129
social stress and dominance in greylag geese	..	..	..	..	171
SOLBERG, J. <i>see</i> TUFTO, J.					1489
solitude and habitat selection in lizards	..	..	..	..	1387
SOLOMON, N.G. <i>see</i> BRANT, C.L.					615
songs					
in canaries	..	..	..	..	291
learning in indigobirds	..	..	..	..	1537
and mating success in water pipits	..	..	..	..	1471
mimicry in indigobirds	..	..	..	..	1537
in Nuttall's white-crowned sparrows	..	..	..	..	939
and sex appeal of male zebra finch	..	..	..	..	1003
sooty mangabeys: following visual gaze of conspecifics	..	..	..	..	1063
SORIANO, J.L. <i>see</i> NONACS, P.					519
spatial memory in foraging capuchin monkeys	..	..	..	..	1229
spawning success in damselfish	..	..	..	..	651
speckled wood butterflies: territorial defence in	..	..	..	..	1341
<i>Spermophilus beldingi</i>					605, 1555
<i>Spermophilus lateralis</i>					529
<i>Spermophilus richardsonii</i>					451
spiders					
multi-male mating and female choice	..	..	..	..	387
social populations of	..	..	..	..	727
STAMPS, J.A., KRISHNAN, V.V. Territory acquisition in lizards. IV. Obtaining high status and exclusive home ranges	..	..	..	..	461
starlings: learning from others' mistakes	..	..	..	..	79
<i>Stator limbatus</i>					473
status and home ranges in lizards	..	..	..	..	461
STAUFFER, H.-P. <i>see</i> SCHMID-HEMPER, P.					819
<i>Stegastes fuscus</i>					1429
steroids, seasonal changes of in red-winged blackbirds	..	..	..	..	957
stink bugs: non-genetic benefits of mate choice	..	..	..	..	1191
STÖHR, S. Evolution of mate-choice copying: a dynamic model	..	..	..	..	893
STOUT, J.C. <i>see</i> GOULSON, D.					199
stumptail macaques: following visual gaze of conspecifics	..	..	..	..	1063
<i>Sturnus vulgaris</i>					79

STUTCHBURY, B.J.M. Extra-pair mating effort of male hooded warblers, <i>Wilsonia citrina</i> ..	553
STUTT, A.D., WILLMER, P. Territorial defence in speckled wood butterflies: do the hottest males always win?	1341
SUGIURA, H. Matching of acoustic features during the vocal exchange of coo calls by Japanese macaques	673
<i>Sula nebulosa</i>	1669
SUN, L., MÜLLER-SCHWARZE, D. Beaver response to recurrent alien scents: scent fence or scent match?	1529
<i>Sus scrofa f. domestica</i>	779
SVENSSON, A.M., RYDELL, J. Mercury vapour lamps interfere with the bat defence of tympanate moths (<i>Operopthera</i> spp., Geometridae)	223
swordtail fish	
sexual selection, shifts	665
symmetrical sexual signals	33
<i>Sylvia communis</i>	153
<i>Tachycineta bicolor</i>	845
<i>Tadorna tadorna</i>	129
<i>Taeniopygia guttata</i>	
daily routines of	715
female-male association in	61
sexual attractiveness of song	1003
tail autotomy and agonistic behaviour in salamanders	1707
<i>Tamias minimus</i>	1571
<i>Tamias striatus</i>	109
<i>Tamiasciurus hudsonicus</i>	511
TARPY, D.R., FLETCHER, D.J.C. Effects of relatedness on queen competition within honey bee colonies	537
TAYLOR, A.C. <i>see</i> NEAT, F.C.	875
TECHERNICHOVSKI, O., SCHWAB, H., NOTTEBOHM, F. Context determines the sex appeal of male zebra finch song	1003
teat massage after milk ingestion in pigs	779
TEFERI, T. <i>see</i> MOSES, R.A.	563
temperature on anti-predator behaviour in guppies	1361
TEMPLETON, J.J. Learning from others' mistakes: a paradox revisited	79
temporal manipulation of ejaculate components by female pomace fly	1637
territorial defence in speckled wood butterflies	1341
territory acquisition in lizards	461
territory size and risk of cuckoldry in birds	915
testosterone and seasonal changes of steroids in red-winged blackbirds	957
<i>Tetramorium caespitum</i>	1443
<i>Tetrao tetrix</i>	893
THACKER, R.W. Avoidance of recently eaten foods by land hermit crabs, <i>Coenobita compressus</i>	485
theridiid spider: social populations of	727
thick-billed murre: parent-offspring recognition in	925
THOMPSON, D.B.A. <i>see</i> CURRIE, D.R.	689
THORNHILL, R. <i>see</i> MÖLLER, A.P.	1507
three-spined sticklebacks: feeding behaviour in	1349
tibial coloration and female choice behaviour in damselfly	1517
<i>Tilapia zillii</i>	875, 883
toads	
predators of	207
sex recognition and mate choice	1631
TODRANK, J., HETH, G., JOHNSTON, R.E. Kin recognition in golden hamsters: evidence for kinship odours	377
TOLLADAY, U. <i>see</i> HURST, J.L.	1289
TOMASELLO, M., CALL, J., HARE, B. Five primate species follow the visual gaze of conspecifics	1063
TOMASZYCKI, M. <i>see</i> GOUZOULES, H.	51
TOMPKINS, L. <i>see</i> BUBIS, J.A.	1637
TRAIL, P.W. <i>see</i> BELL, D.A.	939
transitive dominance structures	1489
tree swallows: paternity and paternal investment in	845
TRIEFENBACH, F., ITZKOWITZ, M. Mate switching as a function of mate quality in convict cichlids, <i>Cichlasoma nigrofasciatum</i>	1263
<i>Troglodytes aedon</i>	1607

true-zero magnetic field, redstarts in	..	..	..	..	..	..	1311
TUFTO, J., SOLBERG, J., RINGSBY, T.-H. Statistical models of transitive and intransitive dominance structures	..	..	..	..	..	..	1489
túngara frog							
female mate choice in	..	..	..	..	..	..	641
<i>Tursiops truncatus</i>							1097
TYGIELSKI, S. <i>see</i> BEISSINGER, S.R.							21
tympanate moths							
bat defences of	..	..	..	..	..	..	223
<i>Uca tangeri</i>							1299
ultrasonic sexual advertisement in wax moths	..	..	..	..	..	..	905
<i>Uma scoparia</i>							1115
UNSELL, J.L. <i>see</i> BUBIS, J.A.							1637
<i>Uria lomvia</i>							925
urine scent marks of male house mice	..	..	..	..	..	..	1289
UTZERI, C. <i>see</i> CORDERO, A.							185
VALLET, E., BEME, I., KREUTZER, M. Two-note syllables in canary songs elicit high levels of sexual display	..	..	..	..	..	..	291
VANDENBERGH, J.G. <i>see</i> BRANT, C.L.							615
vector memories of honey bees	..	..	..	..	..	..	139
VET, L.E.M., DE JONG, A.D., FRANCHI, E., PAPAJ, D.R. The effect of complete versus incomplete information on odour discrimination in a parasitic wasp	..	..	..	..	..	..	1271
<i>Vidua chalybeata</i>							1537
vigilance and locomotion in small mammals	..	..	..	..	..	..	109
visual gaze of primates: conspecifics following	..	..	..	..	..	..	1063
vocal tradition in Nuttall's white-crowned sparrows	..	..	..	..	..	..	939
vocalization							
Japanese macaques	..	..	..	..	..	..	673
túngara frogs	..	..	..	..	..	..	641
vocalizations in greater spear-nosed bats	..	..	..	..	..	..	1717
voles							
behavioural suppression of	..	..	..	..	..	..	615
cooperative breeding and monogamy	..	..	..	..	..	..	1131
population density and food hoarding	..	..	..	..	..	..	1483
WAGNER, W.E. Jr Measuring female mating preferences	..	..	..	..	..	..	1029
WANG, A.K. <i>see</i> ROBERTS, R.L.							1131
WANG, Y.J. <i>see</i> BREED, M.D.							13
warblers: extra-pair mating	..	..	..	..	..	..	553
WARBURTON, H.J., NICOL, C.J. Position of operant costs affects visits to resources by laboratory mice, <i>Mus musculus</i>	..	..	..	..	..	..	1325
wasps: information on odour discrimination in	..	..	..	..	..	..	1271
water pipits: singing and mating success in	..	..	..	..	..	..	1471
WATSON, P.J. Multi-male mating and female choice increase offspring growth in the spider <i>Neriene litigiosa</i> (Linyphiidae)	..	..	..	..	..	..	387
wax moths: ultrasonic advertisement in	..	..	..	..	..	..	905
WECHSLER, B. <i>see</i> HUBER-EICHER, B.							861
WEETMAN, D., ATKINSON, D., CHUBB, J.C. Effects of temperature on anti-predator behaviour in the guppy, <i>Poecilia reticulata</i>	..	..	..	..	..	..	1361
WEINGRILL, T. <i>see</i> HENZI, S.P.							1421
WERNER, I. <i>see</i> KÖLLIKER, M.							215
western scrub-jays: sampling and information acquisition	..	..	..	..	..	..	1245
western toads: sex recognition and mate choice	..	..	..	..	..	..	1631
wheat ear							
extra-pair paternity in	..	..	..	..	..	..	689
WHISKIN, E.E. <i>see</i> GALEF, B.G. Jr							967
WHITE, D.J. <i>see</i> GALEF, B.G. Jr							545
whitethroats: migratory fuelling in	..	..	..	..	..	..	153
WHITNEY, R.L. <i>see</i> CURRIE, D.R.							689
WHITTINGHAM, L.A., DUNN, P.O. Male parental effort and paternity in a variable mating system	..	..	..	..	..	..	629

WIEBE, K.L., WIEHN, J., KORPIMAKI, E. The onset of incubation in birds: can females control hatching patterns?	1043
WIEHN, J. <i>see</i> WIEBE, K.L.	1043
WILKINSON, G.S., BOUGHMAN, J.W. Social calls coordinate foraging in greater spear-nosed bats ..	337
WILKINSON, G.S. <i>see</i> BOUGHMAN, J.W.	1717
WILLIAMS, J.R. <i>see</i> ROBERTS, R.L.	1131
WILLMER, P. <i>see</i> STUTT, A.D.	1341
<i>Wilsonia citrina</i>	553
Wilson's phalaropes: sex-role reversal in	995
WILTENMUTH, E.B., NISHIKAWA, K.C. Geographical variation in agonistic behaviour in a ring species of salamander, <i>Ensatina eschscholtzii</i>	1595
WISE, S.E., JAEGER, R.G. The influence of tail autotomy on agonistic behaviour in a territorial salamander	1707
WITTER, M.S. <i>see</i> DALL, S.R.X.	715
WOLLERMAN, L. Stabilizing and directional preferences of female <i>Hyla ebraccata</i> for calls differing in static properties	1619
woodrats	
sex-biased mortality	563
WOODS, J.L. <i>see</i> PAYNE, R.B.	1537
wrens: energetic cost of begging behaviour	1607
WRIGHT, D.J. <i>see</i> CUNNINGHAM, J.P.	227
<i>Xiphophorus cortezi</i>	33
<i>Xiphophorus helleri</i>	665
XU, Z.M. <i>see</i> SHEN, J.X.	1443
yellow-bellied marmot	
alarm calls	529
yellow-browed leaf warbler	
multiple male traits in	361
yellowhammers and predators	1335
YOUNG, J.R. <i>see</i> HOWARD, R.D.	1165
<i>Zalophus californianus</i>	1087
ZALUCKI, M.P. <i>see</i> CUNNINGHAM, J.P.	227
zebra finches	
daily routines of	715
female-male association in	61
sex appeal and song	1003
<i>Zonotrichia leucophrys nuttalli</i>	939

BOOK REVIEWS



ALTRINGHAM, J.D. Bats: Biology & Behaviour	1402
CHOE, J.C., CRESPI, B.J. The Evolution of Mating Systems in Insects and Arachnids	246
CHOE, J.C., CRESPI, B.J. The Evolution of Social Behavior in Insects and Arachnids	245
CLAYTON, D.H., MOORE, J. Host-Parasite Evolution: General Principles and Avian Models	1401
FAGOT, J., ROGERS, L., WARD, J., BULMAN-FLEMING, B., HOPKINS, W. Hemispheric Specialisation in Animals and Humans	1735
FREEMAN, S., HERRON, J.C. Evolutionary Analysis	1736
GREENE, H.W. Snakes: The Evolution of Mystery in Nature	1734
KLEIMAN, D.G., ALLAN, M.E., THOMPSON, K.V. Wild Mammals in Captivity: Principles and Techniques	2
LANNER, R.M. Made for Each Other: A Symbiosis of Birds and Pines	1738
LEHNER, P.N. Handbook of Ethological Methods	1407
NOLAN, V. Jr, KETTERSON, E.D. Current Ornithology	1733
POWELL, R.A., ZIMMERMAN, J.W., SEAMAN, D.E. Ecology and Behaviour of North American Black Bears: Home Ranges, Habitat and Social Organization	1404
RATCLIFFE, D. The Raven	1406
ROBERTS, W.A. Principles of Animal Cognition	1409
TINBERGEN, N. The Study of Instinct	1409
WHITEN, A., BYRNE, R.W. Machiavellian Intelligence II. Extensions and Evaluations	1403
WRANGHAM, R., PETERSON, D. Demonic Males: Apes and the Origins of Human Violence	247

COMMENTARIES



<i>Acrocephalus melanopogon</i>	502
alarm calls and chick reaction	502
ANTHONISEN, K. <i>see</i> LIFJELD, J.T.	235
BLOMQUIST, D. <i>see</i> LIFJELD, J.T.	235
BROOM, D.M. <i>see</i> MENDEL, M.	773
chick reaction	
and alarm calls	502
hypothesis, clarification of	504
DRICKAMER, L.C. <i>see</i> MEIKLE, D.B.	770
FESSL, B. <i>see</i> KLEINDORFER, S.	504
fluctuating asymmetry	497
GANGESTAD, S.W., THORNHILL, R. The analysis of fluctuating asymmetry redux: the robustness of parametric statistics	497
GARNER, J. <i>see</i> MASON, G.	1071, 1082
HALUPKA, K., HALUPKA, L. Alarm calls and chick reaction: comments on Kleindorfer et al. ..	502
HALUPKA, L. <i>see</i> HALUPKA, K.	502
HOI, H. <i>see</i> KLEINDORFER, S.	504
JAMES, W.H. Porcine sex ratios and sex combination within litters: comment on Meikle et al. and Mendl et al.	767
JOHNSEN, A. <i>see</i> LIFJELD, J.T.	235
KEMPENAERS, B., SHELDON, B.C. Confounded correlations: a reply to Lifjeld et al. and Wagner et al. ..	241
KLEINDORFER, S., HOI, H., FESSL, B. Clarification of the chick reaction hypothesis	504
KROKENE, C. <i>see</i> LIFJELD, J.T.	235
LIFJELD, J.T., ANTHONISEN, K., BLOMQUIST, D., JOHNSEN, A., KROKENE, C., RIGSTAD, K. Studying the influence of paternity on paternal effort: a comment on Kempenaers & Sheldon	235
MASON, G., GARNER, J., MCFARLAND, D. Assessing animal priorities: future directions	1082
MASON, G., MCFARLAND, D., GARNER, J. A demanding task: using economic techniques to assess animal priorities	1071
MATTHEWS, L.R. Using economic techniques to assess animal priorities: repays the investment	1076
MCFARLAND, D. <i>see</i> MASON, G.	1071, 1082
MEIKLE, D.B., VESSEY, S.H., DRICKAMER, L.C. Mechanisms of sex-ratio adjustment in domestic swine: reply to James	770
MENDL, M., BROOM, D.M., ZANELLA, A.J. Multiple mechanisms may affect birth sex ratio in domestic pigs	773
MORTON, E.S. <i>see</i> WAGNER, R.H.	239
moustached warbler	502
NICOL, C.J. <i>see</i> SHERWIN, C.M.	1079
paternal care, negative results	239, 241
paternal effort, influence of paternity on	235, 241
paternity	
and paternal care, negative results	239, 241
and paternal effort	235, 241
porcine sex ratios and sex combination within litters	767
mechanisms of	770, 773
RIGSTAD, K. <i>see</i> LIFJELD, J.T.	235
SCHUG, M.D. <i>see</i> WAGNER, R.H.	239
sex combination within litters	767
sex ratios within litters	767
mechanisms of	770, 773
SHELDON, B.C. <i>see</i> KEMPENAERS, B.	241
SHERWIN, C.M., NICOL, C.J. A demanding task: using economic techniques to assess animal priorities. A reply to Mason et al.	1079
THORNHILL, R. <i>see</i> GANGESTAD, S.W.	497
VESSEY, S.H. <i>see</i> MEIKLE, D.B.	770
WAGNER, R.H., SCHUG, M.D., MORTON, E.S. Studying paternity and paternal care: the value of negative results	239
ZANELLA, A.J. <i>see</i> MENDEL, M.	773



